

Remarks

In the Office Action, all pending claims (i.e., claims 1-24) were rejected under 35 U.S.C. §103(a) as being unpatentable over Boland et al. (U.S. Patent No. 5,826,079; hereinafter Boland) in view of Jones et al. (U.S. Patent No. 5,812,844; hereinafter Jones). This rejection is respectfully, but most strenuously, traversed and reconsideration thereof is requested.

Applicants request reconsideration and withdrawal of the obviousness rejection on at least the following grounds: (1) the Office Action has misinterpreted the teachings of Boland, thus voiding the basis for the rejection; (2) the Office Action and the purported combination of Boland and Jones fails to state a *prima facie* case of obviousness against Applicants' claimed invention; (3) the documents themselves lack any teaching, suggestion or incentive for their further modification as necessary to achieve Applicants' recited invention; (4) the purported rationale for combining Jones and Boland stated in the Office Action is deficient; and (5) the combination, to the extent characterized in the Office Action, is a hindsight reconstruction of the claimed invention using Applicants' own disclosed subject matter.

Applicants' invention, in one aspect, is directed to a computer system which includes tasks potentially contending for a latch (see claim 1). Each task includes:

a probability determining component to dynamically estimate the probability that the task will successfully acquire the latch; and

a suspending component to place the task in a suspended state for a defined sleep time where the estimated probability is below a predetermined threshold value.

Applicants respectfully submit that numerous aspects of their above-summarized invention are not taught or suggested by Boland and Jones, either alone or in combination.

Boland describes a method for improving the execution efficiency of frequently communicating processes utilizing affinity process scheduling by identifying and assigning the frequently communicating processes to the same processor. A sleep/wakeup facility is employed whereby a first process requiring information from a second process is placed into a "sleep" state by the computer system until the second process is able to provide the required information. Upon the second process providing the required information, the computer system awakes the

first process so that the first process may continue processing with the required information. To identify frequently communicating processes, the Boland method maintains a record of each “wakeup” request issued by the computer system, the record including: an identification of the process on whose behalf the wakeup request is issued; and an identification of the process to which the wakeup request is issued. The records are periodically examined to determine a count of the number of wakeup requests between pairs of processors. Should the number of wakeup requests between two processors exceed a predetermined threshold, then those two processes are assigned to the same processor. (See Abstract.)

Relative to Applicants’ independent claims, the Office Action cites certain discussion at column 1, lines 59-67, column 2, line 22 & column 3, lines 12-13 of Boland concerning an affinity scheduler. The affinity scheduler in Boland allocates processors to processes and schedules the processes to run based upon the bases of priority and processor availability. The scheduler dynamically detects problems by periodically examining the run queue lengths of each processor and steals processes from processors having run queue lengths significantly greater than the average, system wide run queue length. The records are periodically examined to determine a count of the number of wakeup requests between pairs of processors. Should the number of wakeup requests between two processors exceed a predetermined threshold, those two processor are assigned to the same processor within the multi-processor computer system for execution.

Applicants respectfully submit that the above-cited teachings of Boland are not relevant to their claimed invention. Applicants recite in their independent claims a probability determining component to dynamically estimate the probability that a task will successfully acquire a latch. The affinity scheduler in Boland is not equivalent to a probability determining component. The affinity scheduler in Boland allocates processors to processes and schedules the processes to run based upon priority and processor availability. The word “affinity” means a relation or connection to a particular processor, while “probability” is a mathematical determination of a chance an event will occur, for example, that a task will successfully acquire a latch. There is no teaching or suggestion in Boland that would direct a person skilled in the art to a probability determining component as recited by Applicants in their independent claims, since a concept of employing probabilities or statistics is simply not taught or suggested by Boland.

Further, the affinity schedule described by Boland does not operate on the principles of probabilities. The affinity scheduler discussed therein operates on the principles of certainty. For at least the above reasons, Applicants respectfully submit that the Office Action mischaracterizes/misinterprets the teachings of Boland when alleging the obviousness rejection to their independent claims. Boland does not disclose the existence of a probability determining component which dynamically estimates the probability that a given task will successfully acquire a latch. For at least this reason, Applicants respectfully request reconsideration and withdrawal of the obviousness rejection to their independent claims based upon the teachings of Boland and Jones.

Still further, Applicants respectfully submit that a *prima facie* case of obviousness is not stated in the Office Action in connection with their independent claims. Assuming, for a moment, that the affinity scheduler in Boland were somehow employing a probability determining component, the resultant system would still not comprise Applicants' invention as presented in their independent claims. Specifically, Applicants' claims (for example, claim 1) recite that each task includes: (1) a probability determining component; and (2) a suspending component. In Applicants' invention, the tasks themselves have the probability determining component and the suspending component. Clearly, the affinity scheduler described by Boland is external to the processes to be executed and would not equate to Applicants' tasks which are potentially contending for a latch. There is simply no teaching or suggestion in Boland that the individual processes themselves include components such as recited by Applicants. In Applicants' invention, each task has a probability determining component to dynamically estimate the probability that that task will successfully acquire the latch; and a suspending component to place that task in a suspended state for a defined sleep time where the estimated probability is below a predetermined threshold value. As noted above, such functionality is not taught or suggested by Boland and/or Jones, and further, neither document teaches or suggests the inclusion of such functionality within the individual task contending for the latch. In view of this deficiency, Applicants respectfully submit that the Office Action fails to set forth a *prima facie* case of obviousness against their claimed invention. For this additional reason, Applicants respectfully submit that the independent claims patentably distinguish over Boland and Jones, even if combined as alleged in the Office Action.

Without acquiescing to the rationale for combining the documents, Applicants also note that if Jones is combined with Boland as proposed, their recited invention would still not have been taught or suggested by the combination as outlined above. As noted, neither Boland nor Jones describes providing a probability determining component for each task potentially contending for a latch, let alone a probability determining component which dynamically estimates the probability that the particular task will successfully acquire the latch.

In addition, Applicants' independent claims recite that each task includes a suspending component to place the task in a suspended state for a defined sleep time where the estimated probability is below a predetermined threshold value. In this regard, the Office Action alleges that Boland teaches this functionality. This characterization of the teachings of Boland is respectfully traversed. The "sleep/wakeup facility" of Boland is not equivalent to the suspend component recited by Applicants. The Boland sleep/wakeup facility operates whereby a first process requiring information from a second process is placed into a "sleep" state by the computer system until the second process is able to provide the required information, where upon the computer system awakes the first process. Boland does not teach placing the task in a sleep/suspend mode for any defined period of time, nor does Boland teach placing the task in a suspend or sleep mode where the probability that the task will successfully acquire a latch is below a predetermined threshold value. With respect to the predetermined time portion of Applicants' independent claims, the Office Action acknowledges that Boland does not explicitly teach this aspect, but rather, relies upon Jones in combination with Boland for an alleged teaching of the concept. The rationale for this combination is respectfully traversed.

As noted above, Boland teaches that a first process requiring information from a second process is placed into a "sleep" state by the computer system until the second process is able to provide the required information. The Office Action alleges at page 3 that this teaching of Boland would be modified by one skilled in the art to say that a first process is placed into a "sleep" state by the computer system for a predetermined time interval because, allegedly, this would improve Boland's affinity process scheduling system by allowing it to know exactly when the threads are awoken from sleeping. This rationale is respectfully, but not strenuously, traversed. Clearly, efficiency of the resultant Jones and Boland system proposed in the Office Action would be significantly worse than the Boland system by itself. If a first process requires

information from a second process, highest efficiency is achieved by awaking the first process once the information is available. To implement a system such as recited in the Office Action would degrade processing since the defined sleep time interval would have no relation to the amount of time required by the second process to complete its processing. Clearly, the most efficient Boland system is to maintain the first process in a sleep mode until the information that the first process requires becomes available. Conceivably, the defined sleep time in Jones could be too small, in which case the first process would continually be awoken, determine that the second process still has not completed processing, and then be returned to sleep mode. Conversely, if the defined interval is too long, then the first process is awakened well after the second process has completed processing, meaning that the overall efficiency of the computer system has been degraded.

For at least the above reasons, Applicants respectfully submit that one of ordinary skill in the art would not have combined the teachings of Jones with those of Boland as outlined in the Office Action.

Still further, upon a review of the applied patents, there is no teaching, suggestion or incentive for further modification of the combination as would be necessary to achieve Applicants' invention. In this regard, neither patent teaches that tasks contending for a latch include a probability determining component and a suspending component. For example, the affinity scheduler in Boland is external to the processes to be executed, and neither patent teaches or suggests a probability determining component which dynamically estimates the probability that a task will successfully acquire a latch, let alone the using of such probability to suspend the task for a defined sleep time where the estimated probability is below a threshold value.

Yet further, the characterizations of the teachings of Boland provided in the Office Action set forth no technical basis outside that contained in Applicants' own specification for the functionality at issue. The characterizations of the teachings of Boland in particular merely assert the language of Applicants' claimed invention in hindsight without explaining how the provision of a probability determining component and a suspending component within tasks potentially contending for a latch as defined in Applicants' independent claims would have been

obvious to one of ordinary skill in the art based upon the alleged combination. Thus, the rejection violates the well known principal that Applicants' own disclosure cannot be used as a reference against them.

The consistent criterion for the determination of obviousness is whether the art would have suggested to one of ordinary skill in the art that the claimed invention should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. The suggestion and the expectation of success must be found in the prior art, not in Applicants' disclosure. In re Dow Chemical Company, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir.) (multiple citations omitted). The alleged combination at issue simply is characterized in the language of Applicants' own disclosure, rather than an identified basis in the prior art for achieving the modifications necessary to arrive at Applicants' claimed invention, in violation of this well known principle. This is yet another, independent reason why the current invention is not obvious over the applied art.

In summary, Applicants traverse the rejection of the independent claims based upon the misinterpretation of the Boland patent; the lack of a *prima facie* case of obviousness stated in the Office Action against their invention based on the combination; the lack of an actual teaching, suggestion or incentive in the art for the modifications necessary to achieve their invention; and the use of Applicants' own disclosure and results as a basis for the alleged modifications.

There is no discussion in Boland or Jones of providing tasks contending for a latch with a probability determining component and a suspending component, let alone the provision of such components so that each task can determine dynamically the probability that the task will successfully acquire the latch, and based on that probability, suspend itself for a defined sleep time where the probability is below a predetermined threshold value.

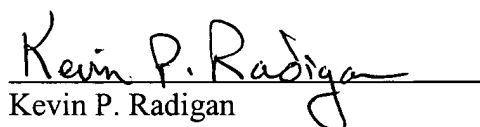
For all the above reasons, Applicants respectfully submit that the independent claims patentably distinguish over the teachings of Boland and Jones. Reconsideration and withdrawal of the obviousness rejection based thereon is therefore respectfully requested.

The dependent claims are believed allowable for the same reasons as the independent claims, as well as for their own additional features. For example, claims 4, 12 & 20 specify that the suspending component of each task adjusts the defined sleep time in accordance with changes in the estimated probability that the task will successfully acquire the latch. No similar functionality is taught or suggested by Boland and/or Jones.

For at least the above reasons, Applicants' respectfully submit that all claims are in condition for allowance, and such as is respectfully requested.

If a telephone conference would be of assistance in advancing prosecution of the subject application, Applicants' undersigned attorney invites the Examiner to telephone him at the number provided.

Respectfully submitted,


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